

CLAIMS

1. In a fuel injection valve having a nozzle body with a nozzle hole(s) at its tip that is opened and closed by a nozzle needle housed in the nozzle body,

a fuel injection valve characterized in that an area of contact between the nozzle needle and a seat on the nozzle body is provided with a coating layer to reduce the frictional resistance with the nozzle body.

2. A fuel injection valve as claimed in claim 1, wherein the coating layer is provided over the entire surface of the nozzle needle.

3. A fuel injection valve as claimed in claim 1, wherein the coating layer is a C2 coating layer.

4. A fuel injection valve as claimed in claim 1, wherein the coating layer is a hard, amorphous carbon film fabricated by ionization vapor deposition.

5. A fuel injection valve as claimed in claim 1, wherein the coating layer is provided as a DCL thin film.

6. A fuel injection valve as claimed in claim 1, 2 3 or 4, wherein the coating layer has a thickness of from 0.1 μm to 30 μm .

7. A fuel injection valve as claimed in claim 1, 2, 3 or 4, wherein the coating layer has a thickness of from 1 μm to 5 μm .

8. A fuel injection valve as claimed in claim 1, 2, 3 or 4, wherein a coefficient of friction between the coating layer and the nozzle body is not more than 0.2.

9. A fuel injection valve as claimed in claim 1, 2, 3 or 4, wherein a coefficient of friction between the coating layer and the nozzle body is not more than 0.1.